ASPECTS OF THE PLANETS FOR SEPTEMBER.

VENUS

Is morning star until the 20th, and then evening star for ten months to come. On the 20th, at 6 o'clock in the evening, she is in superior conjunction with the sun. This is the most interesting event in the month, and gives the Queen of the Stars the place of honor on its planetary record. It has taken this untiring traveler over the celestial road since the 6th of last December to reach the opposite portion of her orbit, as seen from the earth.

She was then—the time of her long-to-be-remembered transit—in inferior conjunction, passing directly between us and the sun, with her dark side turned toward us, as very many observers, who saw her making her way over the sun's disk, had the pleasure to behold.

At superior, or outer, conjunction she will pass beyond the sun, at a distance from the earth of 160,000,000 miles, and if she were not hidden in the sun's rays, would present the appearance of a small round disk, 10 inches in diameter. At inferior, or inner, conjunction she passes between us and the sun, at a distance of 25,000,000 miles, and is usually invisible, her dark side being turned toward us. Her disk is then 60 inches in diameter, and, if her illuminated side were turned toward instead of from the earth, we should behold a superb young moon whose dazzling brilliancy would pale the luster of the stars. Since inferior conjunction, she has oscillated westward from the sun, reaching her extreme western elongation, and retracing her steps toward him. Though Venus is but 112 days in making half her revolution around the sun, it takes her 292 days, or about ten months, to complete half of her synodic period, or reach the point where she, the sun, and the earth are in the same straight line. While she is moving in her orbit at the rate of 21 miles a second, the earth is moving, in a much larger orbit, at the rate of 18 miles a second. Therefore 292 days are required to bring them into line, and 584 days must pass before a synodic revolution is completed.

These points being fixed in the mind, the brilliant course of Venus for the next ten months is easily followed. After superior conjunction, on the 20th, she passes from the sun's western to his eastern side, and becomes evening star. For a month or two she will be so close to the sun as to be invisible, but in November sharp eyes will pick her up as a small, brilliant star, shining, in the western twilight, for a short time after sunset. She will be superb in the winter evenings as she oscillates eastward toward elongation, and the midsummer of another year will pass before, retracing her steps toward the sun, she comes again to inferior conjunction. There are four epochs to be impressed upon the memory in tracing the movements of the inferior or inner planets. These are, inferior conjunction, western elongation, superior conjunction, and eastern elongation. It is easier to follow the course of Venus while evening star, for it does not require the exertion of early rising to reward observation. Students will therefore begin to anticipate her reappearance in November, and can easily follow her progress with an intelligent comprehension of the reasons that result in her apparently devious path.

On the 17th, at 11 o'clock in the morning, Venus is in conjunction with Uranus passing 45′ north. The event is interesting, as it shows the proximity of the two planets, the former being nearly ready to pass to the sun's eastern side, while the latter has just passed to his western side.

The right ascension of Venus is 10 h. 53 m.; her declination is 11° 30′ north, and her diameter is 10″.

Venus rises on the 1st at 5 o'clock in the morning; on the 30th, she sets a few minutes before 6 o'clock in the evening.

URANUS

is evening star until the 16th, when he joins the company of morning stars, thus reversing the role that Venus plays during the month. On the 16th, at 7 o'clock in the evening, he is in conjunction with the sun. After conjunction, he appears on the western side of the sun and becomes morning star. All the outer planets of the system are then on the sun's western side, and all are traveling with varying speed toward opposition in the following order of precedence: Neptune leads the brotherhood, rising on the 16th at half past 8 o'clock in the evening. Saturn follows at half past 9 o'clock. Mars appears a few minutes before midnight. Jupiter takes his turn at 1 o'clock in the morning, and Uranus brings up the rear, closely hugging the sun. Venus and Uranus illustrate the difference between the superior conjunction of an inner planet and the conjunction of an outer planet. In the former case, Venus seems to pass from the sun's western side to his eastern. In the latter case, Uranus seems to pass from the sun's eastern side to his western. In reality, the planets all revolve around the sun from west to east, their apparent movements being due to the fact that they are viewed from the earth, which is a moving observatory. Viewed from the sun their movements would be much less complicated.

The right ascension of Uranus is 11 h. 35 m., his declination is 3° 31′ north, and his diameter is 3·4″.

Uranus sets on the 1st at 7 o'clock in the evening; on the 30th, he rises ten minutes before 5 o'clock in the morning.

SATURN

is morning star. On the 2d at 3 o'clock in the morning he is in quadrature with the sun, the second of the great planets to reach this epoch in his course, the half-way house in his progress from conjunction to opposition. He is becoming an object of exceeding interest to observers, for, rising now at half-past 10 o'clock, and at the end of the month at a quarter before 9 o'clock, he may be seen peering above the horizon without requiring the observer to encroach on the hours devoted to sleep to gain a view of his serene and softly-shining disk. He may be recognized by his vicinity to Aldebaran and the Pleiades, and by the color of pale gold that distinguishes him from his brother planets. Beautiful as is his present appearance among the stars, he will continue to increase in size and brilliancy until the last of November, when he reaches the culminating point for the present year.

The right ascension of Saturn is 4 h. 33 m., his declination is 20° 3′ north, and his diameter is 17·2″.

Saturn rises on the 1st at half-past 10 o'clock in the evening; on the 30th, he rises a quarter before 9 o'clock.

MARS

is morning star. On the 21st, at 11 o'clock in the morning, he is in conjunction with Delta Geminorum, a star of the third magnitude in the constellation of the Twins, being 49′ north. He will be near the star on the early morning of that day, and may be recognized by his ruddy color and his position a few degrees southwest of Castor and Pollux. His increasing size and brightness are so slight as to be scarcely perceptible. Indeed, he is never impressive excepting when at opposition and for a month before and after. As his opposition does not occur until January, 1884, we must wait until nearly that time to see the Martian planet under favorable conditions.

The right ascension of Mars is 6 h. 23 m., his declination is 23° 37′ north, and his diameter is 6·2″.

Mars rises on the 1st soon after midnight; on the 30th, he rises at half past 11 o'clock in the evening.

MERCURY

is evening star during the month. On the 11th, at 3 o'clock in the morning, he reaches his greatest eastern elongation, and is 26° 49′ east of the sun. Though nearly at his maximum distance from the sun, it will be difficult to find him on account of his southern declination. On the 11th, Mercury sets at 7 o'clock, about three-quarters of an hour after sunset. It will take sharp eyes to discern him in the west at that time and for a few days before and after. But it is the last time he will be visible as evening star during the year. He may be looked for a few degrees west of Spica, and nearly 13° south of the sunrise point.

The right ascension of Mercury is 12 h. 11 m., his declination is 2° 30′ south, and his diameter is 6″.

Mercury sets on the 1st at twenty minutes after 7 o'clock in the evening; on the 30th, he sets a few minutes before 6 o'clock.

JUPITER

is morning star. He contributes scarcely anything to the incidents of the month, though he plays the leading part in its scenic effects. Beaming with tremulous light, he shows his princely face above the horizon shortly before 2 o'clock in the morning, and on moonless nights shines without a rival, leading the host of heaven as he rises to the zenith, which he fails to reach before his lesser light is hidden in the sunbeams. Well may we be proud of this grand member of the system, and much do we hope to learn of his constitution from the view he will present in the telescope when he draws nearer to the earth, in his annual sweep around the sun.

The right ascension of Jupiter is now 7 h. 50 m., his declination is 21° 12′ north, and his diameter is 31·8″.

Jupiter rises on the 1st, about a quarter before 2 o'clock in the morning; on the 30th he rises about a quarter after 12 o'clock.

NEPTUNE

is morning star. His claims to notice are that he is the first to rise, and the nearest to opposition among the morning stars.

The right ascension of Neptune is 3 h. 16 m., his declination is 16° 19′ north, and his diameter is 2·6″.

Neptune rises on the first at half past 9 o'clock in the evening; on the 30th he rises about half-past 7 o'clock.

THE MOON.

The September moon fulls on the 16th at thirty-three minutes past 4 o'clock in the evening, Washington mean time. The new moon of the 1st is in conjunction with Uranus on the 2d and with Mercury on the 3d. The full moon of the 16th is very near Neptune on the 20th, being 10′ north. On the 21st she is in conjunction with Saturn, being 1° 14′ south. In some portions of the southern hemisphere Saturn is occulted at this time for the sixth time during the year. The beautiful phenomenon has not once been visible at Washington, nor at many points adjacent. On the 24th, the waning moon pays her respects to Mars, on the 25th to Jupiter, and on the 30th to Uranus for the second time. Thus this ponderous sphere sails majestically through space, drawing near on her way to the more important members of the solar brotherhood. She takes on her most distinguished aspect during September, for she appears as the lovely Harvest Moon, rising for several successive nights with a comparatively small average difference in the time of her appearance above the horizon.

September plays a noteworthy part on the annual planetary record. Venus reaches inferior conjunction, the preparatory step that will make her the peerless starry gem of the evening sky for months to come. Uranus arrives at conjunction, and joins the whole array of outer planets congregated on the sun's western side as morning stars. Saturn is in quadrature, and grows brighter and draws nearer at every appearance. Mars contributes to the show his conjunction with Delta Geminorum. Mercury appears for a short time in the glowing west, his last evening exhibition for the year. Jupiter foreshadows the glory of his later reign. The sun himself takes on one of his most attractive phases, when on the 23d he reaches the autumnal equinox, and in serene equipoise illumines the earth from pole to pole.

The Barometer.

While no instrument of weather research has figured more conspicuously than the barometer, there is perhaps none the indications of which are less understood. As its name imports, it is a *measurer* of *weight* (but exclusively of the weight of the atmosphere), and only indirectly can it be made to serve the purpose of a "storm glass" or weather guide. At an early date it was known that air, though invisible to the eye, is really a substantial body possessing weight, and the familiar experiment of weighing a glass globe before and after the air in it is exhausted by an air-pump was made to demonstrate the fact. But the barometer is designed, not to weigh given quantities of air, but to weigh the atmosphere itself, or a column of air reaching from the earth's surface to the uppermost limit to which the atmosphere extends above the instrument.

The weight of a column of the atmosphere was first ascertained by the Italian philosopher Torricelli, a pupil of Galileo, in 1643. Galileo had observed that water would not rise in a pump more than 34 feet above the level of the water in the well, but vainly endeavored to explain the phenomenon. Torricelli took a glass tube, about three feet long, closed at one end and filled with mercury, then, placing his finger over the open end, inverted it, and plunged it in an open basin filled with mercury. When the inverted tube was held erect and his finger removed, the experimenter found that the mercury in the tube sank until its upper surface was just 30 inches above the mercury in the basin, remaining stationary, and leaving a vacuum in the top of the tube. He explained this result by the theory that the 30 inches of mercury within the tube was kept up, balanced by the weight of the column of air pressing on the mercury in the open basin. The actual proof that Torricelli's was the correct explanation was given not long after by Pascal, whose brother-in-law, Perrier, in 1648, at his request, carried the apparatus to the summit of the French mountain Puy de Dôme, about 3,500 feet above the sea, and found that at that elevation the column of mercury supported in the tube was only 27 inches; because at that level a tenth part of the whole weight of the atmosphere had been left beneath.

While the weight of the atmosphere, as shown by the oscillations of the mercury in the barometric tube, varies with its position above the sea level, it also varies greatly at the same level. "We live," says Herschel, "under an ocean of air, which has its currents, which are winds, its waves, of vast extent, not visible indeed to the eye, but capable of being made so to the intellect by the barometer, and its tides, due to the action of the sun and moon." The pulsations of this aerial ocean are as well marked by the barometer as those of the seas and rivers are by the tide gauge in our harbors. Even at the sea level the height of the mercurial column in the barometer ranges from about 27·50 to 31·50 inches, under the alternation of cyclonic and anti-cyclonic conditions. But these are extremes observed, respectively, only in ocean hurricanes and in the frozen wastes of Central Asia in midwinter. The average height of the barometer, however, is very different in different parts of the globe, and in different seasons. These we need not specify. At Philadelphia, mean normal barometric pressure, observed by the Signal Office, is, taking the year round, 30·01 inches; for winter, 30·07; for spring, nearly 29·97; for summer, 29·96; for autumn, 30·04 inches. Besides these yearly fluctuations, there is also a daily variation of the barometer—entirely independent of storms—and though the daily variation is slight, it is very regular (being marked by a *rise* of the mercury near the hours of 10 A. M. and 10 P. M., and a *fall* about 4 P. M. and 4 A. M.). So regular are these diurnal variations of pressure within the tropics, that Humboldt thought that the hour of the day could be inferred from the height of the mercury, to within fifteen or sixteen minutes.

The results of such fluctuations of air pressure over any portion of the earth's surface are, of course, extensive and violent commotions of the great gaseous sea. When these fluctuations are gradually produced by the slow accretion or withdrawal of sun heat, as in the change of seasons, the result is a reversal or change of direction of the prevailing winds. Over a region in which the barometric pressure is higher than 30·00 inches the air is dense and *massed up*, so that, by its own gravity, it will spread out or run in all directions toward adjacent regions in which the pressure is lower and the resistances can be overcome by the force of its own gravity. If the air pressure, therefore, at any time is, say, 30·60 inches over Minnesota and only 29·50 over Louisiana, it is clear that the air masses over Minnesota will move southward, causing northerly winds in the Mississippi Valley. If, however, at the same time the air pressure over Ontario was still lower (say 29·00 inches), the aerial stream from Minnesota would gravitate more readily and more rapidly eastward into Canada. It is the change in the weight of the atmosphere over any geographical area which gives rise to storms—a diminution of pressure forming a partial vacuum into which the air from all sides rushes, forming the cyclone, with ascending air in its center; while an increase of pressure originates the anti-cyclone, with its descending currents. In general, as Professor Haughton puts it, "*A line of low barometric pressure will correspond to ascending currents in the atmosphere, and a line of high barometric pressure will correspond to descending currents in the atmosphere.*"

The principle of gauging atmospheric waves by the barometer depends on the fact that the column of mercury in its tube always weighs as much as a column of air having the same diameter as the bore of the tube, and reaching from the bottom (or cistern) of the instrument to the uppermost limit of the atmosphere, far above cloudland. Were the tube filled with water, leaving a vacuum in its upper part, the column of water kept up by the air pressing on its base, at the lower end of the tube, would be about 34 feet high near the sea-level, instead of 30 inches, as in the mercury-filled barometer. The principle on which the fluid oscillates with varying pressure depends, of course, on obtaining a vacuum in the top of the barometric tube; the ordinary pump, on the same principle, raises water from the well when a vacuum is created in the pump-log by forcing the pump handle downward.

The simplest form of the barometer is a glass tube of large bore standing vertically in a cistern of mercury, the height of the mercury in the tube above the level of the mercury in the cistern being read off by the aid of a graduated scale placed beside the tube. This is the form of the "Standard" barometer used at Kew Observatory, England. In ordinary barometers the scale (of brass) is attached to the frame in which the tube is secured, the scale having been divided into inches, tenths of inches, and lesser fractions.

Another form of barometer is the "aneroid." In this form of barometer the air pressure is simply measured by its effect on a small, air-tight metallic box (made by soldering together two disks of corrugated German silver), from which the air has been exhausted. When the pressure of the atmosphere is heavier than the normal, the top of the box is pressed inward; when the pressure falls lower, the top of the box is forced outward by a spring which acts in opposition to the movement of the vacuum chamber. These movements of the lid of the metallic box are transmitted by delicate multiplying levers and a small chain to an index, which moves over a circular graduated scale, and thus shows the pressure changes. This instrument is so handy that it may be carried in the pocket.

As the scientific investigation of weather phenomena progresses, there is an increasing need for the employment by all observers of mercurial barometers corrected and frequently compared with a standard. At sea a single faulty barometer may give a reading which when entered on the "weather chart" may prove misleading as to the form and intensity of a cyclone under investigation, while on land a single incorrect barometer reading may deprive the meteorologist of the most important datum he can have for forecasting a dangerous storm.—*Phila. Ledger.*

A Fearfully Destructive Tornado.

A tornado passed over portions of Winona and Dodge Counties, Minnesota, on the evening of August 21, that destroyed residences, elevators, public and other buildings, a railroad bridge, and a moving passenger train on the Rochester (Minn.) and Northern Division of the Chicago and Northwestern Railroad, the accident occurring near Zumbrota, Minn. The train, running at a high rate of speed, was caught in the wind storm and lifted from the track. Every car of the train was a complete wreck, and was almost literally shattered to pieces by the sudden stop caused by the train's leaving the rails, burying the unfortunate passengers beneath the debris, killing many, and injuring nearly every person on the train. The number of dead from passengers on this train has been estimated at not less than twenty, and of the injured eighty more. In Rochester, Minn., three hundred houses were demolished and two hundred more were damaged.

A Meteor in New York Bay.

On the evening of August 21, as one of the Staten Island ferryboats was approaching Governor's Island, a large white colored meteor shot across the horizon and burst with a loud report so close to Bedloe's Island that it seemed as if some of the matter—if there was any—of which the aerial missile was composed, must have landed amid the tree tops where the great statue will soon stand. Only the evening star was visible in the sky when the meteor appeared. One of the fleet of the Iron Steamboat Company was passing near Bedloe's Island at the time, and the three electric lights on board were easily compared in color with the low-reaching meteor. The latter looked much more clear and white, and gave the electric light a yellowish hue.

Something New in Street Cars.

On the Hamburg tramways a number of cars with flangeless wheels, much like omnibuses, and with turning gear, are working. To run on the lines, these cars are fitted with a shaft in front of the front wheels, this shaft carrying on a lever a disk wheel which the driver can lower into the tramrail groove as he requires, or raise it when it is necessary to get out of the way of obstructions. The arrangement works well, saves a lot of trouble, and the cars run easier than those with flanged wheels.

Correspondence.

The Storage of Wind Power.

To the Editor of the Scientific American:

I have been reading with interest the several articles published in your paper on the "Storage of Wind Power," have made several inventions in that line myself, and therefore beg leave also to offer my mite.

My idea of wind force is this: were the available energy of the wind that passes over the roof of a manufactory, through a space of 10 feet in height, utilized, it would be sufficient to run all the machinery therein, or, in other words, *the force of the wind is sufficient to run all machinery.*

Deep valleys are perhaps the only places where there is a scarcity of wind, and yet it would be an easy matter to transmit power from wind wheels on the adjoining hills. Here the All-wise Creator has also provided an auxiliary power, for where is there a valley without a stream?

But an accumulator is needed. Several days often pass without a strong breeze.

W. O. A. has certainly given some very practical hints, although the idea of dynamizing it into electricity can hardly be considered at present.

The compressed air plan, of the two, is the most feasible, but the great drawback is the cost of the plant.

I had thought of the plan suggested by Mr. Davis some time ago, but came to the conclusion that it is of no practical value.

For instance, take a manufactory 30 feet high. I would have to raise a weight of 355 T, approximately 360 T in practice, to this height, to accumulate one horse power for one working day (twelve hours).

It can readily be seen how much weight and space it would take to accumulate sixty or seventy horse power. This plan would also be very expensive. By substituting large steel springs for the weight, I could save space, and, I think, expense; this may be illustrated by clocks, etc. This plan seems practical. Some day I intend to give it a fair trial.

D. H. BAUSMAN.

Lancaster, Pa. August 17, 1883.

Fish Ponds for Farms.

A writer under the *nom de plume* of Norman, in the *Prairie Farmer*, gives its readers some practical information as to the construction of inexpensive fish ponds and how to stock them. We make the following extracts from the above source:

Having indicated the possibility of farms having a pond for fishes and enjoying a dish of sweet fish at times, we want also to show how this can be done at little expense and labor. We stated in a previous letter, says the writer, that an acre of water can be made to produce more than an acre of land. A farmer writing to an Ohio paper says:

"We write from practical experience in this matter, having in earlier days caught many a nice string of fish in a pond that was formerly a swamp. During one day in August, the owner, with two of his boys, went in it with a plow, road scraper, and shovels, and in a short time had a pond of nearly an acre in extent. This he stocked with fish common to the sluggish streams of the neighborhood, and procured others at some distance from the farm. For years thereafter it proved to be the best acre on the farm."

While we do not advocate so cheaply made a pond as this, mainly on the principle that "that which costs nothing is of no value," still, this is better than no pond, and if a few trees and flowering shrubs are planted around it would make a pleasant, shady spot in the summer heat. If some aquatic plants are put in the bottom of the pond, they will furnish food for fish, and produce flowers on the surface. Your unsightly swamp or slough becomes a picture as well as a means of enjoyment and profit. Where springs exist, as described in my previous letter, some means must be provided to carry off the surplus water, especially if the lower portion of the pond is a deep ditch or slough. Let this be gradually shaped to an oval form, leaving about six feet wide to form your dam. If the head of your water will not exceed five feet, a simple dam and embankment of clayey earth will be sufficient. Let the dam be solidly constructed by putting a tree across for the breastwork. Square up this piece of timber, and let it be of sufficient length to be embedded into the earth some feet on each side of the ditch or dike. For the dam get good solid boards, set upright edge to edge. If hardwood planks can be obtained, elm or alder wood, so much the better will your dam be built. We should advise a bottom stringer to be put in; a tree squared up will form the best support. Inside this stringer dig a ditch two feet deep, and let the planks come to the bottom of this trench; puddle and ram them into position with clay and make a firm bottom. Build up an inclined slope of clay and stones. As you ascend, puddle and beat the clay into position against the planks. Get your road scrapers to work, and on this clay run up some of the mud and silt from the bottom of the pond. This all will give you a dam with a pond that will increase the value of your farm. A trough or sluice must be provided to carry off the surplus water. Experiments must govern you in its construction. A simple trough, a foot wide, four inches deep, will carry off a large quantity of water. Let the top of your dam around the wings be well rammed and beaten with clay, so as to prevent any leakage of water.

Into such a pond it will be necessary to put a few aquatic plants of such kind as will attract flies and larvæ, thus enabling young fish fry to obtain food in a natural state. Also plant willows near the dam. The roots will spread into the earth, binding it together, and also provide hiding places for the young fish.

Our readers will recall the fact that to successfully increase fish and keep them up to a good standard in size, we must provide proper food for them. We do this by putting in minnows and fish of such kinds as are prolific, yet of small value as food fishes. These in turn will "form food for fishes." To feed these minnows we put in aquatic plants that attract insects. We will name a few that are common: Potamogeton, Myriophyllum (water millfoil), Utricularia (bladder wort), common water lily, Polygonum, Amphibium, Pennsylvanicum, Nasturtium officinale (water cress), Zizania aquatica (water oats, or Indian rice), Sagittaria (arrowhead), a fine calla-like growing plant.

If we wish to introduce some insect life in our pond, we examine the weeds pulled from the bottom of some neighboring lake or stream, and find them teeming with minute creatures. Let us watch the minnows and small fry around these weeds! How carefully they nose around them, pushing the leaves aside. These minnows live on these infusoria. Pull a bucketful of the weeds, carry them to your pond, lay the roots on the soft mud, put a stone across the roots, and you will find the weeds soon growing. The few minnows we have put in have found the weeds and are getting a feast. Your minnows will increase and multiply. Get some yellow perch, a few pickerel, and half a dozen small bass. We cannot commend the sun fish, simply because he is a cheeky gormand, snapping up everything that comes across his way, having a decided fondness for spawn of all kinds. There are better fish to be had, but he has one advantage to commend him—he will live in almost any water.

The best table fishes for ponds having springs in them are the bass, the yellow perch, and pickerel; put in a few bullheads or pouts; they are good food fry.

Many farms in these times have a windmill on them for furnishing water for stock, and supplying the house from the well instead of the laborious pumping by hand. By all means lay on a pipe to the fish pond. It will pay. The fish named will live in water pumped from the well even though impregnated somewhat with sulphur or iron. Perhaps the soil on a farm may be gravelly, and not bearing soil in which the small blood red worms are found; such soil needs "stocking." From some stream or lake we dip up a paddle full of mud. A careful examination proves it to be full of minute worms and other forms of infusorial life. Deposit some of this mud in your pond, and you have fish food for another class of fry. Let us follow nature in her plan. Her courses are simple, few, and generally direct. She adopts a means to an end, and varies little in her aims.

It is useless to attempt to stock a pond with trout, because these love the dashing, seething brook. It is useless to put the carp in a pond with the bass family, because the latter are a carnivorous family, and must live on fish fry. The carp must be bred in ponds especially prepared for them, and after breeding must be kept separate from the young fry.

Finally, keep your pond clean. Do not make it a place for the cattle to wade in and drop their excrements. In time, put a fence around it. Plant some species of pines near to it. A few maples or rock elms will add to its beauty and afford a graceful shade. Plant some willows along its sides close to the water. These, overhanging, will afford the fish a shadow from the sun's rays, and their roots will make a good spawning bed; though a proper bed should be made in season and left in the water. A mat of brush fastened in a framework of wood, and sunk to the bottom, forms a good spawning bed for members of the perch family.

Let some attention be given every spring and fall to your pond. Repair all damages. Look to your "finny stock," sometimes feed with carcasses that are the "results of accidents" on every farm. Let this be done in nature's own way. Drive a stake into a pond to fasten such things to, and in a few hours the swarms of fish in your pond are looking for maggots, of which they are very fond.

Let me counsel in conclusion: Never allow a net to be cast in your pond. Teach your boys and girls to take their fish in the correct manner "with rod and line." If the fish increase too rapidly, then have a family picnic; invite your friends and neighbors, and have a grand, good time cooking your fish near the pond, and have one good day's sport beside this best acre on your farm.

Effects Produced by High Pressures.

M. Friedel, having contested the announcement of M. Spring that a pressure of 5,000 atmospheres exerted upon amorphous pulverulent matters causes them to become aggregated into crystalline masses, MM. E. Jannettaz, Neel, and Clermont determined to repeat his experiments, using pressures of from 6,000 to 8,000 atmospheres. They operated upon pulverized antimony, bismuth, zinc, iron, tin, copper, and lead, Darcet's alloy and brass, lead, and zinc sulphides, sodium lead and mercurous chlorides, mercuric iodide, magnesia, alumina, silica, chalk, and copper sulphate. All these powders were agglutinated into solid masses, but even those which acquired some degree of transparency were not crystallized. Many of the substances, however, such as steatite, graphite, clays, and metals, acquired a schistous structure, and assumed the thermic properties characteristic of such structure.